



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5
9311 GROH ROAD
GROSSE ILE, MI 48138

MEMORANDUM

SUBJECT: Screening and Removal Management Levels for the North Suburban Cleaners Site, Morton Grove, IL.

FROM: Keith Fusinski, PhD Toxicologist US EPA
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DATE: 2/14/2017

The US EPA determines probability of a non-cancer detrimental health effect to occur by calculating a hazard quotient (HQ). The HQ is a ratio of a single substance exposure level over a specified period of time to a reference dose of the same substance derived from a similar exposure period. It is recommended that the HQ of an exposure to a chemical of concern be below or equal to 1 which is the level at which no adverse human health effects are expected to occur. For cancer risk, the U.S. EPA recommends a screening level that would equate to a one in a million (1×10^{-6}) or greater lifetime risk of developing cancer from exposure to a contaminated site, this is also known as Excess Lifetime Cancer Risk (ELCR). However, rates up to 1 in 10,000 (1×10^{-4}) can be considered acceptable.

US EPA Regional Screening Levels (RSLs) are set at an HQ of 1 or an ELCR of 1 in a million for each chemical, depending upon which concentration is most protective. The Office of Land and Emergency Management has set EPA Removal Management Levels (RMLs) at a HQ of 3 or a 1 in 10,000 ELCR for each chemical, whichever is most protective. This is true for every chemical except for TCE, which the RML is set to an HQ of 1 to protect against potential short term exposure effects.

The tables below show Remedial Action Objectives (RAOs) based upon various protective concentrations. Table 1 shows RAOs based upon US EPA RSLs, Table 2 shows RAOs based upon Illinois EPA TACO screening levels. Table 3 shows RAOs based upon EPA RMLs. It is important to note that "Soil Gas" in the tables refer to both deep soil gas and soil gas collected directly under the slab of the building, commonly known as "subslab soil gas".

The Site is located in the village of Morton Grove, Illinois. Response actions are subject to the Illinois Environmental Protection Agency (IEPA) cleanup goals that are applicable or relevant and appropriate requirements for the Site. After consultation with toxicologists with the IEPA, I recommend that Table 3 be used as the screening levels and Tables 1 and 2 be used to formulate your cleanup goals for this Site.

If you have any questions, please contact me at Fusinski.Keith@epa.gov.

Table 1. RAOs based upon EPA RSLs

| | EPA Action Objectives (based upon 1x10 ⁻⁶ ELCR or HQ of 1) | | | | | | | |
|------------------------|---|--------------|----------|------------|-------------|--------------|----------|------------|
| | Commercial/Industrial | | | | Residential | | | |
| | Soil | Ground Water | Soil Gas | Indoor Air | Soil | Ground Water | Soil Gas | Indoor Air |
| | mg/kg | ug/L | ug/m3 | ug/m3 | mg/kg | ug/L | ug/m3 | ug/m3 |
| Tetrachloroethene | 103 | 65 | 1600 | 47 | 24 | 15 | 360 | 11 |
| Trichloroethene | 6 | 7.4 | 100 | 3 | 0.94 | 1.2 | 16 | 0.48 |
| 1,2-dichloroethane | 2.0 | 9.8 | 16 | 0.47 | 0.46 | 2.2 | 3.6 | 0.11 |
| cis-1,2-Dichloroethene | 2340 | - | - | - | 160 | - | - | - |
| Vinyl Chloride | 1.7 | 2.5 | 93 | 2.8 | 0.06 | 0.15 | 5.6 | 0.17 |

Table 2. RAOs based upon IEPA TACO rules.

| | Illinois TACO Action Objectives (based upon 1x10 ⁻⁶ ELCR or HQ of 1) | | | | | | | |
|------------------------|---|--------------|---------------|------------|-------------|--------------|---------------|------------|
| | Commercial/Industrial | | | | Residential | | | |
| | Soil | Ground Water | Soil Gas | Indoor Air | Soil | Ground Water | Soil Gas | Indoor Air |
| | mg/kg | ug/L | ug/m3 | ug/m3 | mg/kg | ug/L | ug/m3 | ug/m3 |
| Tetrachloroethene | 20 (inh) | 340 | 4,000 | N/A | 11 (inh) | 90 | 55 | N/A |
| Trichloroethene | 8.9 (inh) | 1,300 | 12,000 | N/A | 5.0 (inh) | 340 | 1,500 | N/A |
| 1,2-dichloroethane | 0.7 (inh) | 220 | 810 | N/A | 0.4 (inh) | 54 | 99 | N/A |
| cis-1,2-Dichloroethene | 1,200 (inh) | 3,500,000 | 1,100,000,000 | N/A | 780 (ing) | 3,500,000 | 1,100,000,000 | N/A |
| Vinyl Chloride | 1.1 (inh) | 210 | 4,800 | N/A | 0.28 (inh) | 28 | 290 | N/A |

inh = IEPA TACO Tier 1 Soil Remediation Objectives for inhalation

Ing = IEPA TACO Tier 1 Soil Remediation Objectives for ingestion

Table 3. RAOs based upon EPA RMLs

| | EPA Action Objectives (based upon 1x10 ⁻⁴ ELCR or HQ of 3) | | | | | | | |
|------------------------|---|--------------|----------|------------|-------------|--------------|----------|------------|
| | Commercial/Industrial | | | | Residential | | | |
| | Soil | Ground Water | Soil Gas | Indoor Air | Soil | Ground Water | Soil Gas | Indoor Air |
| | mg/kg | ug/L | ug/m3 | ug/m3 | mg/kg | ug/L | ug/m3 | ug/m3 |
| Tetrachloroethene | 1200 | 730 | 18000 | 530 | 240 | 170 | 4200 | 130 |
| Trichloroethene | 56 | 22 | 290 | 8.8 | 12 | 5.2 | 70 | 2.1 |
| 1,2-dichloroethane | 200 | 980 | 1600 | 47 | 46 | 220 | 360 | 11 |
| cis-1,2-Dichloroethene | 7000 | - | - | - | 470 | - | - | - |
| Vinyl Chloride | 170 | 280 | 9300 | 280 | 5.9 | 15 | 560 | 17 |